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pexata, *Eupagurus pollicaris*, *Ostrea virginiana* and *Cancer irroratus*.

The significance of this unique occurrence of zinc in the economy of *Sycotypus* and *Fulgur* is still to be determined, as is the nature of the combination in which it exists. These points, together with the distribution of the element in other marine forms about the sound, are at present being investigated and will be reported upon later.

HAROLD C. BRADLEY.

SHEFFIELD LABORATORY OF PHYSIOLOGICAL
CHEMISTRY, YALE UNIVERSITY.

ATMOSPHERIC NITROGEN FOR FERTILIZING PURPOSES.

OF much interest to scientific students of agricultural economy is the report of the United States Consul-General Mason, at Berlin, Germany, on a new method of producing nitrogen from the atmosphere for soil fertilization, as announced in the daily 'Consular Report,' No. 1804, issued by the Bureau of Statistics, Department of Commerce and Labor.

The gradual but ultimately inevitable exhaustion of the known nitrate deposits of South America, the report states, lends a growing interest to the methods which have been devised for obtaining a supply of nitrogen for fertilizing purposes from the inexhaustible storehouse of the air. That this can be done as a scientific process has long been known. The first method was by passing a current of air over red-heated copper, whereby the oxygen combined with the metal to form oxide of copper, leaving the nitrogen free. At first the nitrogen thus produced was fixed by combination with calcium carbide to form nitrate of lime (Kalkstickstoff) or calcium cyanimide, a combination of lime carbon and nitrogen, which had all the essential properties of a nitrate fertilizer. But as the use of calcium carbide rendered the product unduly expensive, a method was sought which would employ a substitute for that material, and this was found by Dr. Erlwein, who brought the nitrogen into combination with a mixture of powdered charcoal and lime in an electric furnace. The product of this combination is

a black substance containing, besides the lime and carbon, ten to fifteen per cent. of nitrogen, in perfect condition to be used as a fertilizer. From the experiments thus far made with this new artificial nitrate—which is known in commerce as calcium cyanimide—it appears that its nitrogen acts upon plants quite as effectively as that contained in a proportionate quantity of nitrate of potassium or sodium nitrate (Chile saltpeter). The scientific problem of obtaining nitrogen for fertilizing purposes from the atmosphere would seem, therefore, to be satisfactorily solved. Whether it can be done on a very large scale and at a cost which will make it economically available for general agricultural purposes remains to be demonstrated by practical experience.

JOHN FRANKLIN CROWELL.

MISSOURI LEAD AND ZINC REGIONS VISITED BY THE GEOLOGICAL SOCIETY OF AMERICA.

At the close of the St. Louis meeting of the Geological Society of America, January 2, an excursion to the Missouri lead and zinc regions was given by the Missouri Bureau of Geology and Mines to the members of the society whose work would allow them time for the journey. In the company several universities were represented—Alabama, Dartmouth, Kentucky, McGill, Missouri, Northwestern, Rochester, Springfield and Toronto, and several members of geological surveys were present—Geological Survey of Canada, Missouri, Ontario, West Virginia and the United States. The excursion allowed of a view of the Missouri geological scale from the St. Louis formation (of the sub-Carboniferous), through Devonian, Ordovician, Cambrian to the Algonkian, and many phases of geology, from *peneplain* to paleontology, had their share of attention. However, the chief place in the thought of the visitors was occupied by the mineral resources of the famous lead and zinc localities. A day and a half was spent in the eastern lead region—the classical locality for lead production in the Mississippi valley. A number of mines and mills at Bonne Terre and Central were visited, and the facts obtained there, when combined with those ob-